RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _10/658,834B_

Source: _1FW16_

Date Processed by STIC: _7/18/05_

ENTERED

Serial Number: 10/658,834B CRF Edit Date: 7/20/05
Edited by: AL

____ Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line

____ Corrected the SEQ ID NO. Sequence numbers edited were:

_____

____ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

_____

✓ Deleted: ✓ invalid beginning/end-of-file text ; ____ page numbers

____ Inserted mandatory headings/numeric identifiers, specifically:

_____

____ Moved responses to same line as heading/numeric identifier, specifically:

_____

____ Other:

_____
_____
_____

Revised 09/09/2003

IFW16

RAW SEQUENCE LISTING   DATE: 07/20/2005
PATENT APPLICATION: US/10/658,834B   TIME: 13:55:24

Input Set : **N:\AMC\658834.txt**
Output Set: **N:\CRF4\07202005\J658834B.raw**

```
 4 <110> APPLICANT: Gantier, Rene
 5         Guyon, Thierry
 6         Drittanti, Lila
 7         Vega, Manuel
 9 <120> TITLE OF INVENTION: Rational Evolution of Cytokines for Higher Stability, the
Cytokines
10         Encoding Nucleic Acid Molecules
12 <130> FILE REFERENCE: 38751-922
14 <140> CURRENT APPLICATION NUMBER: 10/658,834B
15 <141> CURRENT FILING DATE: 2003-09-08
17 <150> PRIOR APPLICATION NUMBER: 60/457,135
18 <151> PRIOR FILING DATE: 2003-03-21
20 <150> PRIOR APPLICATION NUMBER: 60/409,898
21 <151> PRIOR FILING DATE: 2002-09-09
23 <160> NUMBER OF SEQ ID NOS: 1306
25 <170> SOFTWARE: FastSEQ for Windows Version 4.0
27 <210> SEQ ID NO: 1
28 <211> LENGTH: 165
29 <212> TYPE: PRT
30 <213> ORGANISM: Homo sapiens
32 <400> SEQUENCE: 1
33 Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
34 1               5                   10                  15
35 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
36             20                  25                  30
37 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
38             35                  40                  45
39 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
40      50                  55                  60
41 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
42 65                  70                  75                  80
43 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
44                  85                  90                  95
45 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
46             100                 105                 110
47 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
48             115                 120                 125
49 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
50      130                 135                 140
51 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
52 145                 150                 155                 160
53 Leu Arg Ser Lys Glu
54                 165
55 <210> SEQ ID NO: 2
```

RAW SEQUENCE LISTING   DATE: 07/20/2005
PATENT APPLICATION: US/10/658,834B   TIME: 13:55:24

Input Set : **N:\AMC\658834.txt**
Output Set: **N:\CRF4\07202005\J658834B.raw**

```
56 <211> LENGTH: 165
.57 <212> TYPE: PRT
58 <213> ORGANISM: Artificial Sequence
60 <220> FEATURE:
61 <223> OTHER INFORMATION: D2A Mutant IFN-alpha 2b
63 <400> SEQUENCE: 2
64 Cys Ala Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
65 1               5                   10                  15
66 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
67             20                  25                  30
68 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
69         35                  40                  45
70 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
71     50                  55                  60
72 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
73 65                  70                  75                  80
74 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
75                 85                  90                  95
76 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
77                 100                 105                 110
78 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
79         115                 120                 125
80 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
81     130                 135                 140
82 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
83 145                 150                 155                 160
84 Leu Arg Ser Lys Glu
85                 165
86 <210> SEQ ID NO: 3
87 <211> LENGTH: 165
88 <212> TYPE: PRT
89 <213> ORGANISM: Artificial Sequence .
91 <220> FEATURE:
92 <223> OTHER INFORMATION: P4A Mutant IFN-alpha 2b
94 <400> SEQUENCE: 3
95 Cys Asp Leu Ala Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
96 1               5                   10                  15
.97 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
98             20                  25                  30
99 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
100         35·                 40                  45
101 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
102     50                  55                  60
103 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
104 65                  70              75                  80
105 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
106                 85                  90                  95
107 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
108                 100                 105                 110
```

RAW SEQUENCE LISTING   DATE: 07/20/2005
PATENT APPLICATION: US/10/658,834B   TIME: 13:55:24

Input Set : **N:\AMC\658834.txt**
Output Set: **N:\CRF4\07202005\J658834B.raw**

```
109 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
110         115                 120                 125
111 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
112         130                 135                 140
113 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
114 145                 150                 155                 160
115 Leu Arg Ser Lys Glu
116                 165
117 <210> SEQ ID NO: 4
118 <211> LENGTH: 165
119 <212> TYPE: PRT
120 <213> ORGANISM: Artificial Sequence
122 <220> FEATURE:
123 <223> OTHER INFORMATION: Q5A Mutant IFN-alpha 2b
125 <400> SEQUENCE: 4
126 Cys Asp Leu Pro Ala Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
127 1               5                 10                  15
128 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
129         20                  25                  30
130 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
131         35                  40                  45
132 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
133     50                  55                  60
134 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
135 65                  70                  75                  80
136 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
137                 85                  90                  95
138 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
139             100                 105                 110
140 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
141         115                 120                 125
142 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
143         130                 135                 140
144 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 145                 150                 155                 160
146 Leu Arg Ser Lys Glu
147                 165
148 <210> SEQ ID NO: 5
149 <211> LENGTH: 165
150 <212> TYPE: PRT
151 <213> ORGANISM: Artificial Sequence
153 <220> FEATURE:
154 <223> OTHER INFORMATION: T6A Mutant IFN-alpha 2b
156 <400> SEQUENCE: 5
157 Cys Asp Leu Pro Gln Ala His Ser Leu Gly Ser Arg Arg Thr Leu Met
158 1               5                 10                  15
159 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
160         20                  25                  30
161 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
```

```
162        35                    40                    45
163 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
164    50                    55                    60
165 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
166 65                    70                    75                    80
167 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
168                85                    90                    95
169 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
170                100                   105                   110
171 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
172        115                   120                   125
173 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
174    130                   135                   140
175 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
176 145                   150                   155                   160
177 Leu Arg Ser Lys Glu
178                165
179 <210> SEQ ID NO: 6
180 <211> LENGTH: 165
181 <212> TYPE: PRT
182 <213> ORGANISM: Artificial Sequence
184 <220> FEATURE:
185 <223> OTHER INFORMATION: H7A Mutant IFN-alpha 2b
187 <400> SEQUENCE: 6
188 Cys Asp Leu Pro Gln Thr Ala Ser Leu Gly Ser Arg Arg Thr Leu Met
189 1              5                    10                   15
190 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
191                20                    25                    30
192 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
193            35                    40                    45
194 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
195    50                    55                    60
196 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
197 65                    70                    75                    80
198 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
199                85                    90                    95
200 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
201                100                   105                   110
202 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
203        115                   120                   125
204 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
205    130                   135                   140
206 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
207 145                   150                   155                   160
208 Leu Arg Ser Lys Glu
209                165
210 <210> SEQ ID NO: 7
211 <211> LENGTH: 165
212 <212> TYPE: PRT
```

RAW SEQUENCE LISTING   DATE: 07/20/2005
PATENT APPLICATION: US/10/658,834B   TIME: 13:55:24

Input Set : **N:\AMC\658834.txt**
Output Set: **N:\CRF4\07202005\J658834B.raw**

```
213 <213> ORGANISM: Artificial Sequence
215 <220> FEATURE:
216 <223> OTHER INFORMATION: S8A Mutant IFN-alpha 2b
218 <400> SEQUENCE: 7
219 Cys Asp Leu Pro Gln Thr His Ala Leu Gly Ser Arg Arg Thr Leu Met
220 1               5                   10                  15
221 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
222             20                  25                  30
223 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
224         35                  40                  45
225 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
226     50                  55                  60
227 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
228 65                  70                  75                  80
229 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
230             85                  90                  95
231 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
232             100                 105                 110
233 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
234         115                 120                 125
235 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
236     130                 135                 140
237 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
238 145                 150                 155                 160
239 Leu Arg Ser Lys Glu
240                 165
242 <210> SEQ ID NO: 8
243 <211> LENGTH: 165
244 <212> TYPE: PRT
245 <213> ORGANISM: Artificial Sequence
247 <220> FEATURE:
248 <223> OTHER INFORMATION: L9A Mutant IFN-alpha 2b
250 <400> SEQUENCE: 8
251 Cys Asp Leu Pro Gln Thr His Ser Ala Gly Ser Arg Arg Thr Leu Met
252 1               5                   10                  15
253 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
254             20                  25                  30
255 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
256         35                  40                  45
257 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
258     50                  55                  60
259 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
260 65                  70                  75                  80
261 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
262             85                  90                  95
263 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
264             100                 105                 110
265 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
266         115                 120                 125
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 07/20/2005
PATENT APPLICATION: **US/10/658,834B**   TIME: 13:55:25

Input Set : **N:\AMC\658834.txt**
Output Set: **N:\CRF4\07202005\J658834B.raw**

<u>Please Note:</u>
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:231; N Pos. 1,22

VERIFICATION SUMMARY   DATE: 07/20/2005
PATENT APPLICATION: **US/10/658,834B**   TIME: 13:55:25

Input Set : **N:\AMC\658834.txt**
Output Set: **N:\CRF4\07202005\J658834B.raw**

```
L:6720 M:283 W: Missing Blank Line separator, <300> field identifier
L:7153 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7154 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7155 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7156 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7157 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7160 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:231 after pos.:0
```

Raw Sequence Listing before editing,
for reference only

RAW SEQUENCE LISTING   DATE: 07/18/2005
PATENT APPLICATION: US/10/658,834B   TIME: 14:11:38

Input Set : **N:\DA\pto.da.txt**
Output Set: **N:\CRF4\07152005\J658834B.raw**

```
 4 <110> APPLICANT: Gantier, Rene
 5        Guyon, Thierry
 6        Drittanti, Lila
 7        Vega, Manuel
 9 <120> TITLE OF INVENTION: Rational Evolution of Cytokines for Higher Stability, the
Cytokines
10        Encoding Nucleic Acid Molecules
12 <130> FILE REFERENCE: 38751-922
14 <140> CURRENT APPLICATION NUMBER: 10/658,834B
15 <141> CURRENT FILING DATE: 2003-09-08
17 <150> PRIOR APPLICATION NUMBER: 60/457,135
18 <151> PRIOR FILING DATE: 2003-03-21
20 <150> PRIOR APPLICATION NUMBER: 60/409,898
21 <151> PRIOR FILING DATE: 2002-09-09
23 <160> NUMBER OF SEQ ID NOS: 1306
25 <170> SOFTWARE: FastSEQ for Windows Version 4.0
```

*Does Not Comply
Corrected Diskette Needed*

ERRORED SEQUENCES

```
38737 <210> SEQ ID NO: 1306
38738 <211> LENGTH: 41
38739 <212> TYPE: DNA
38740 <213> ORGANISM: Artificial Sequence
38742 <220> FEATURE:
38743 <223> OTHER INFORMATION: primer reverse IFNA-E159Q
38745 <400> SEQUENCE: 1306
38746 aacatatgtg tgatctgcct caaacccaca gcctgggtag c          41
```

E--> 38748 115
E--> 38751 114

VERIFICATION SUMMARY   DATE: 07/18/2005
PATENT APPLICATION: US/10/658,834B   TIME: 14:11:42

Input Set : **N:\DA\pto.da.txt**
Output Set: **N:\CRF4\07152005\J658834B.raw**

L:7153 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7154 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7155 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7156 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7157 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7160 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:231 after pos.:0
L:38748 M:254 E: No. of Bases conflict, this line has no nucleotides.
M:254 Repeated in SeqNo=1306